HOUGHTON MIFFLIN HARCOURT

February 15, 2011

Mr. Jeff Zaring
State Board of Education Administrator
Indiana Department of Education
Room 225 State House
Indianapolis, IN 46204

Attention: Mr. Jeff Zaring, Administrator

Dear Dr. Bennett and Members of the State Board of Education,

We respectfully request that the State Board of Education reconsider the assessment of Houghton Mifflin Harcourt's secondary math series: *Holt McDougal Algebra 1, Geometry*, and *Algebra 2*, and *Holt McDougal Larson Algebra 1, Geometry*, and *Algebra 2*. Both of these programs were listed as "Unsatisfactory" after review by the Dana Center and Indiana teachers despite conflicting recommendations by the two groups. It is our opinion that the reviews by both groups were subjective and not thorough, and therefore led to inconsistencies and contradictions between the evaluation of individual standards and overall ratings.

To begin, reviewers erroneously deemed Labs and Activities, key elements of the programs, as optional, which was not the intent of the publisher. Labs and Activities are integral to our coverage of the standards, and by not reviewing them the committee missed essential content supporting our coverage of the Standards for Mathematical Practice.

The following are two examples of the subjective overall rating of the textbooks

- For *Holt McDougal Algebra 1*, the reviewer assigned a rating score of 3 or 4 (strong rating) for 42 of the criteria, and 1 or 2 (weak rating) for 27 of the criteria yet the summary rating was a 1, the lowest possible score.
- For *Holt McDougal Larson Algebra 1*, the reviewer assigned a rating score of 3 or 4 (strong rating) for 75 of the criteria, and 1 or 2 (weak rating) for another 75 of the criteria, yet the summary rating again was a 1, the lowest possible score.

Attached please find responses to each title in our series, citing specific ratings and responses where possible. Since there was an inconsistency in the amount of detail we were provided from the reviewers, it was difficult for us to provide a thoughtful response to the rating. For some levels we received comprehensive reviews and comments, while for others, we only received partial documentation.

In regard to the Standards for Mathematical Practice, the Dana Center reviewed only a small portion of the overall program in its review of these Standards. Our coverage of the Standards for Mathematical Practice is integrated throughout the program, as the mathematical practices are not equally applicable to every mathematical concept. For a true understanding of how we integrate and provide complete coverage of these standards, the Dana Center would need to review the entire program.

Thank you for reconsidering these Houghton Mifflin Harcourt instructional materials for adoption by the teachers of Indiana.

Sincerely,

John Sipe
Senior Vice President, National Sales Manager
Houghton Mifflin Harcourt

Response to Review of *Holt McDougal Geometry*
for the Indiana Mathematics Adoption

Alignment to the Standards for Mathematical Practice

Summary

While the Dana Center rated *Holt McDougal Geometry* as Minimal Evidence, we believe that assessment overlooked several key features of the program that strongly support the Standards for Mathematical Practice. First and foremost, the Indiana teacher panel rated *Holt McDougal Geometry* as a 3 or 4 (of 4) on every one of the Standards for Mathematical Practice. In addition, Dana Center reviewers also used their own discretion to label some sections, such as Geometry Labs and Technology Labs, as "optional." That claim is subjective, as the publishers believe these are key instructional elements within the student text. In addition, Dana Center reviewers only reviewed a small portion of the content provided. All mathematical practices are not equally applicable to different mathematical concepts, so many of their responses may have been unfairly biased by looking at an isolated section of material. Specific details relating to each of the standards are noted below. We believe the sum of these constitutes far more than Minimal Evidence.

1. Make sense of problems and persevere in solving them.

The Dana Center notes that there are "few" open-ended questions in the lessons. Actually, every lesson contains Think and Discuss questions in the Student Edition. Furthermore, Questioning Strategies are provided in the Teacher Edition for every example in every lesson. Every exercise set also includes open-ended questions, including those labeled Error Analysis, Critical Thinking, and Write About it. Many exercise sets require students to write proofs, which by their very nature are open-ended and can be approached using many different methods. In addition, the Teacher Edition includes a Journal activity and an Alternative Assessment for every lesson. Additional features provide more opportunities for in-depth problem solving. These include the Multi-Step Test Prep (twice per chapter), Real-World Connections (every other chapter), and online Chapter Projects (every chapter).

2. Reason abstractly and quantitatively.

As noted by the Dana Center reviewers, lessons and exercise sets consistently include application problems. The reviewer notes that students are "rarely asked to create a model for an application aside from the Geometry Labs." The reviewer implies that the models developed in the Geometry Labs are excluded from consideration, but this is a serious mistake. The Geometry and Technology Labs are an integral part of the instructional design of this program, and dismissing the content contained in them is misguided and unfair. In addition, the reviewer makes similar comments about modeling activities presented in the teacher edition, noting that "it would be up to the teacher to implement."

This is simply subjective and discounts quality materials that are provided as part of the overall program. Indiana teachers, on the other hand, seemed more than satisfied with the available resources and gave the program the highest rating, 4 out of 4, for this standard.

3. Construct viable arguments and critique the reasoning of others.
With Think and Discuss, Critical Thinking, and Write About It exercises in every lesson, students are constantly given opportunities to construct arguments and justify their thinking. Error Analysis exercises specifically challenge students to critique erroneous solution processes. Proofs and constructions are integrated throughout the text and constantly require students to apply reasoning skills. The Questioning Strategies in the Teacher Edition offer further support and opportunities to both encourage reflective thought and generate classroom discourse. In addition, the Reaching All Learners feature in every lesson in the Teacher Edition gives further suggestions for cooperative learning and communication (e.g., pp. 29, 97, 268, and 489). Despite all of these opportunities, the reviewer presents a subjective opinion that "they may be skipped." Indiana teachers seemed to disagree once again and gave the program the highest rating, 4 out of 4, for this standard.

4. Model with mathematics
Holt McDougal Geometry offers students ample opportunities to model mathematical concepts, using both concrete manipulatives and technology. The Dana Center reviewer notes as much but comments again that these occurred most often in Labs, which "could be skipped." The publisher reiterates that the Labs are essential instructional components, especially to support the depth of instruction suggested by the Common Core Standards. Modeling opportunities include Geometry Software (e.g., p. 12), paper folding (e.g., p. 16), compass and straightedge (e.g., pp. 172), graphing calculators (e.g., pp. 188-189), physical models (e.g., pp. 240-241), visual models (e.g., p. 347), nets (p. 669), and spreadsheets (pp. 722-723). The teacher edition provides additional modeling opportunities using geoboards, mirrors/Mira, and more. Again Indiana teachers gave the program the highest rating, 4 out of 4, for this standard.

5. Use appropriate tools strategically.
The Dana Center reviewer notes that the book contains constructions and other opportunities to use tools, but complains again about their use being constrained in labs. The reviewer suggests that the use of tools is "not inherent in the section examples;" however, constructions and other tools are integrated into lessons and exercises as well as labs (e.g., pp. 16, 21-25, 163, 248-249, 307, 526, 529, and 761 (#36)). Many different types of tools are incorporated as noted in the response to Standard 4. The teacher edition provides even more opportunities to use tools, including Mira, geometry software, and geoboards (e.g., pp. 301, 309, and 773). Again Indiana teachers gave the program the highest rating, 4 out of 4, for this standard.

6. Attend to precision.
As noted by the Dana Center reviewer, examples "use proper notation and are precise." The reviewer also notes that the book provides many opportunities for written communication, but the reviewer cites a lack of opportunities for discussion. We disagree as noted by the inclusion of Think And Discuss questions in every lesson. Further opportunities are given in the Teacher Edition: Questioning Strategies, Reaching All Learners, Journal, and Alternative Assessment for every lesson. Again Indiana teachers gave the program the highest rating, 4 out of 4, for this standard.

7. Look for and make use of structure.
Holt McDougal Geometry offers ample opportunities for students to develop patterns and analyze structure in geometric contexts. The reviewer cites Chapter 10 as an example of a rule always being given and not discovered, but this is a severe overgeneralization. For example, the rule for Euler's Formula in Lesson 10-3 is discovered based on a pattern of specific examples in the Geometry Lab that immediately precedes the lesson (p. 669). This is yet another example of the Dana Center reviewer arbitrarily choosing to ignore important content. Similarly, the surface area formulas in Lessons 10-4 and 10-5 are developed using nets and models before the formula is formally presented. More examples of using patterns to develop concepts can be found throughout the text (e.g., pp. 154, 222, 250-251, 331, and 383) In these cases, patterns are used to generalize rules and formulas and to develop true understanding of the appropriate algorithms.

8. Look for and express regularity in repeated reasoning.
As noted in the response to Standard 7, there is an abundance of the use of patterns to develop mathematical concepts. The reviewer again falls back on the familiar complaint that many of these opportunities occur in labs, which would depend on the teacher to implement. This recurring argument is overreaching and patently unfair. Think and Discuss questions in the student edition and Questioning Strategies in the Teacher Edition constantly build connections among previously learned concepts. In addition, the Multi-Step Test Prep and Real-World Connection features connect a variety of concepts in an engaging problem-solving context (e.g., pp. 102, 294-295, 448-449, and 478).